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IMPACT OF PARTICIPATORY SEED PRODUCTION PROGRAMME ON ADOPTION LEVEL OF PADDY SEED PRODUCERS UNDER RASTRIYA KRISHI VIKAS YOJONA (RKVY) ON JUNAGARH BLOCK OF KALAHANDI DISTRICT (ODISHA)

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ABSTRACT

Green revolution has been trying from since 1966 to increase production, productivity and total gross domestic product (GDP) but agriculture sector failed to maintain its pre-reform growth. Concerned by the slow growth National Development Council resolved to initiate an additional central assistant scheme (Rashtriya Krishi Vikas Yojna) to achieve 4 per cent agriculture growth rate by filling the production focused intervention necessitated the strategies for boosting the production of quality seed as the Seed Replacement Rate (SRR) of the state was one of the main concern. In order to accelerate the seed replacement rate, the RKVY through its participatory seed production programme was supposed to be the welcome feature. This programme was sanctioned to Agriculture department, Odisha and implemented in 2007-08 in Kalahandi district districts of Odisha. Since regular evaluation is a necessary concomitant of such programme to assess the impact and suggest strategy for further growth and expansion of the programme. Accordingly, the present investigation entitled "The impact of participatory seed production Programme on adoption behaviour of paddy seed producers under RKVY on Junagarh block of Kalahand idistrict (Odisha)" was under taken to assess the impact of the programme on adoption behaviour of paddy seed producers. The study was based on 120 respondents (60 beneficiaries and 60 non-beneficiaries as control) covering 6 villages and 1 blocks of both districts for analysing the impact on adoption behaviour of seed producers. It was hypothesized that the programme has significantly contributed to adoption of seed production technology. The ex-post facto research design was adopted in this investigation. The responses were obtained by administering the pretested interview schedules. The findings inferred that Socioeconomic and psychological characteristics i.e. cognitive and motivational factors viz. attitudes, knowledge, risk bearing, innovativeness etc. were observed higher in case of beneficiaries than non-beneficiaries. Beneficiaries had positive favorable attitude whereas, non-beneficiaries had lower responsive attitude towards agricultural technology. The level of knowledge of beneficiaries about various aspects of seed production technology was higher whereas, non-beneficiaries were ignorant about some aspects of the seed production technology. The socio-economic and psychological variables under study were highly significant and positively correlated with the of the seed producers. The profitability level of beneficiaries was recorded higher than

KEYWORDS: 60 Beneficiaries and 60 Non-Beneficiaries, Seed Production Technology

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Original Article

INTRODUCTION

Agriculture is the largest and the most important sector to boost the Indian economy. More than two third of the population depends on agriculture. Due to continued efforts made by the government and other concerned developmental agencies; India's food grain production has reached around 257.44 MT during 2013-14.

India remains mainly an agrarian economy in spite of planned efforts to industrialization. In the agrarian economy, agriculture exports have shown special significance and foreign trade has depicted dynamic character. It can create capacity to increase wealth. It is now recognized that capital accumulation in a developing country is not mearly a matter of domestic savings, but is a question of foreign trade and balance of payment.

Quality seed is an important input for increasing agricultural productivity. Appreciating its pivotal role in meeting the challenges posed by increasing population, the Indian government initiated various policy measures which contributed in the growth of seed industry in India. From a few units there has been a tremendous rise (more than 200 seed companies in private sector) in number of seed companies and corporations. Quality seed production of 346.36 lakh quintals in 2012-13 and 353.62 lakh quintals in 2013-14, 51 per cent was produced by Government agencies and 49 per cent by private seed companies (Ministry of Agriculture 23 may, 2012).

Seed production is a risky venture as there is always a chance of rejection at the certification stage. The institutional sources have not fully appreciated the need for higher scale of finance for seed production. Also, there is no insurance for seed crop production.

The concept of seed village is not new. One of the task was to educate and train the farmers about its higher yielding capacity. The improved variety yielded almost double than the paddy varieties available at that time. This generated a great demand for paddy seed.

Agricultural technologies are evolved at research stations and communicated to the farmers for its adoption, but these technologies are not fully adopted by the farmer.

Besides, the above slated efforts Rastriya Krishi VikashYojna (RKVY), Ministry of Agriculture came into action for increasing the seed production in order to fulfill the demand of the slate. National Developments Council (NDC), Government of India in its 53rd meeting on 29-05-2007 resolved that a special scheme should be launched for meeting the 4% annual growth in agriculture sector during 12th five year plan. The Council resolved t

OBJECTIVES

- To ascertain the level of adoption of paddy seed production technology.
- To find out the relationship between the selected independent variables and Adoption of improved seed production technology of paddy crop as dependent variables.

REVIEW OF LITERATURES

Dhillon and Kumar (2004): reported that maximum number of respondent (44.17%) were observed to have medium extent of adoption in terms of area under the crop, 26.67 per cent and 19.17 per cent were found to have low and high extent of adoption, respectively. Level of adoption was medium for nearly half of the respondents (49.17%) whereas 32.50 per cent and 18.33 per cent farmers had and high level of adoption, respectively,

Manoj and Sharma (2004): stated that majority of small respondents had medium level of adoption about improved practices of gram cultivation, whereas majority of the marginal farmers had low level of adoption as compared to big and small farmers.

Singh *et al.* (2005): observed that the adoption of recommended varieties of wheat viz., Sonalika, K-65, C-306. Mukta were found to the level of 41.33 per cent of the total sample farmers, followed by paddy. Gram and what to the extent of 11.11,27.11 and 31.*55* per cent respectively.

METHODOLOGY

Ex-post-facto research design was followed in the present investigation. it is a systematic inquiry in which researcher does not have direct control of independent variables because their manifestation have already occurred and they cannot be manipulated. The present study was carried out using ex-post facto research design during 2013-14 in the purposiviely selected kalahandi district as the participatory seed production programme. under RKVY was implemented in this district. The sample population consisted 120 (60 beneficiaries and 60 non beneficiaries) were selected from 6 villages of 1 block of kalahandi district.it was hypothesized that the progressive was significant contributed enhance knowledge of beneficiaries. The statistical tools were used for determining the extent of knowledge on three points continuum as full, partial, and non-adoption. The independent variables represented personal, socio-economic and psychological characteristics of the respondents and were empirically measured by procedures evolved for the purpose by earlier researchers. A structured and pre-tested interview schedule was to collect data from the respondents by personal interview methods.

Co-Efficient of Correlation ('r' Value)

Co-efficient of correlation was computed to find out the relationship between the variables. The correlation coefficient gives two kinds of information (i) degree of the relationship and (ii) direction of the relationship (whether positive or negative) between any two variables.

For computing the correlation coefficient 'r' the Karl Pearson method was used as under.

$$\mathbf{r} = \frac{\sum \mathbf{x.y}}{\sqrt{\sum \mathbf{x^2.y^2}}}$$

Where,

$X = (X - \bar{X})$, $Y = (Y - \bar{Y})$

r = correlation coefficient

X = Independent variable

Y = Dependent variable

$\sum xy = \sum (X - \bar{X})(Y - \bar{Y})$

$\sum X^2 = \sum (X - \bar{X})^2$

$\sum Y^2 = \sum (Y - \bar{Y})^2$

Z Test

To test the hypothesis z test was used because of the large sample size. This test was used to find out if there were any significance difference between beneficiaries and non-beneficiaries as regarding their knowledge and adoption of seed production technology.

$X1-X2$

- $Z=\frac{\sqrt{(S1)2+(S2)2}}{n1+n2}$
- X1=mean of the first sample
- X2=mean of second sample
- $S_1^{2=}$ standard deviation of first sample
- $S_1^{2=}$ standard deviation of second sample
- N1= no of observation of first sample
- N2= no of observation of second sample

Practice Wise Extent of Adoption of Beneficiaries about Paddy Seed Production Technology

Table 1: Practice Wise Extent of Adoption of Beneficiaries about Paddy Seed Production Technology

S. No	Technology	Recommended Level	Full Adoption	Partial Adoption	No-Adoption
1	2	3	4	5	6
1	Selection of field and preparation	Loamy with good water holding & drainage, free of disease and weeds.	36(60.00%)	10(16.66%)	14(23.34%)
2	Mature and fertilizer	8 trolly/ha-FYM, 120:60:60 NPK kg/ha	37(61.67%)	16(26.66%)	7(11.67%)
3	Improved varieties		36(60%)	14(23.34%)	10(16.66%)
4	Seed rate	110 kg/ha	37(61.67%)	14(23.33%)	9(15.00%)
5	Seed treatment with fungicides	Carbendazim, bavistin	39(65.00%)	13(21.66%)	8(13.34%)
6	Time of sowing	April-may Dec –feb	37(61.67%)	13(21.66%)	10(16.67%)
7	Depth of sowing	3 cm	35(58.33%)	14(23.34%)	11(18.33%)
8	Spacing	20x10 cm	40(66.67%)	12(20.00%)	8(13.33%)
9	Method of sowing	transplanting	35(58.34%)	18(30.00%)	7(11.66%)
10	Isolation distance	3 meter	38(63.34%)	13(21.66%)	9(15%)
11	Irrigation management	6 irrigation	37(61.67%)	15(25.00%)	8(13.33%)
12	Weed management	One manual/chemical weeding	41(68.34%)	14(23.33%)	5(8.33%)
13	Insect pest and disease management	Stem borer, Gandhibug, Swarming caterpillar.	35(58.33%)	19(31.67%)	6(10%)
14	Field inspection	4 inspection	38(63.33%)	12(20.00%)	10(16.67%)
15	Rouging	Off type, other varieties plant and diseased plant	40(66.67%)	13(21.66%)	7(11.67%)

Table 1: Contd.,					
16	Proper time of harvesting	Soon after maturity, moisture 16% below	38(63.34%)	14(23.33%)	8(13.33%)
17	Prevent admixture of seed	Varietal mixture, weed seed	41(68.33%)	13(21.66%)	6(10%)
18	Storage	12% moisture content and stored in dry, insect and rodent proof warehouse	48(80%)	8(13.33%)	4(6.67%)

Table 2: Practice of Adoption Wise Distribution of Non-Beneficiaries Respondents

Sl. No.	Technology	Recommended Level	Full Adoption	Partial Adoption	No-Adoption
1	2	3	4	5	6
1	Selection of field and preparation	Loamy with good water holding & drainage, free of diseases and weeds,	25 (41.67%)	23 (38.33%)	12 (20.00%)
2	Manure and fertilizer	8trolley/ ha -FYM, 100:50:50 NPK kg/ha	25(41.67%)	19(31.66%)	16(26.66%)
3	Improved varieties		15(25.00%)	19(31.66%)	26(44.33%)
4	Seed rate	100 Kg/ha.	13(21.67%)	14(23.33%)	33(55.00%)
5	Seed treatment with fungicide	Carbendazim	14(23.33%)	13(21.67%)	33(55.00%)
6	Time of sowing	First to second fortnight of November	19(31.66%)	17(28.34%)	24(40.00%)
7	Depth of sowing	5 cm	19(31.66%)	18(30.00%)	23(38.33%)
8	spacing	20x10 cm	18(30.00%)	19(31.66%)	23(38.34%)
9	Method of sowing	Seed drill	18(30.00%)	19(31.66%)	23(38.34%)
10	Isolation Distance	3 meter	5(8.33%)	12(20.00%)	43(71.67%)
11	Irrigation Management	6 irrigation	20(33.33%)	18(30.00%)	22(36.67%)
12	Weed Management	One manual/chemical weeding	17(28.33%)	21(35.00%)	22(36.67%)
13	Insect pest and Disease Management	Stem borer, termite, rust, & loose smut	25(41.67%)	17(28.33%)	18(30.00%)
14	Field inspection	4 inspection'	3(5%)	8(13.33%)	49(81.67%)
15	Roguing	Off type, other varieties plant and diseased plant	5(8.33%)	8(13.33%)	47(78.34%)
16	Proper time of harvesting	Soon after maturity, moisture 16 % below	9(15.00%)	35(58.33%)	16(26.67%)
17	Prevent admixture of seed	Varietal mixture, weed seed	10(16.67%)	19(31.66%)	31(51.67%)
18	Storage	12 % moisture content and stored in dry, insect and rodent Proof Warehouse	18(30.00%)	12(20.00%)	30(50.00%)

Extent of Adoption of Recommended Paddy Seed Production Technology by Beneficiaries and Non-Beneficiaries

Table 3: Overall Extent of Adoption Wise Distribution of Respondents

S. No	Categories	Beneficiaries		Non- Beneficiaries	
		Frequency	Percentage	Frequency	Percentage
1	2	3	4	5	6
1	Low (18-27)	12	20.00	30	50.00
2	Medium (28-36)	13	21.67	18	30.00
3	High (above 37)	35	58.33	20	20.00
	Total	**60**	**100.00**	**60**	**100.00**

$\bar{X}_1$=45.71 $\bar{X}_2$= 35.06

$S.d_1$=13.70 $S.d_2$=10.17

Z test= 2.58

Tab 5%=1.96

It is clear from the table 3. that of total beneficiaries. 58.33 per cent had high extent of adoption followed by 21.67 per cent being medium and 20 of low adoption, whereas in case of non- beneficiaries 50.00 per cent having low, 30.00 per cent bad medium and 20.00 per cent were having high extent of adoption. Thus, it may be inferred from the above observation that higher percentage of beneficiaries (58.33%) were found to have had higher extent of adoption as comparednon-beneficiary(20.00%). The analysis of adoption behavior based on seed production technology had also differentiated relatively efficient producers from the relatively inefficient producers.

In order to find out if there was a significant difference between beneficiaries and non-beneficiaries as regards to their overall extent of adoption, the following null hypothesis (ho) was tested. There was no significant difference between beneficiaries and non-beneficiaries as regards their extent of adoption of seed production technology. The calculated value of Z test was found to be 2.58 which was greater than the table value of z (1.96) at 5 % level of significance. Hence, the null hypothesis (Ho) was rejected and the alternate hypothesis was accepted.

It may be concluded that there was significant difference between beneficiaries and non-beneficiaries regarding extent of adoption of seed production technology. Beneficiaries had greater extent of adoption than non-beneficiaries as it was to be expected, the findings are in the conformity of the findings of **Manoj and Sharma (2004), Bussain*et al,* (2009) and Burman*el al.* (2010).**

Table 4: Correlation between Independent Variables and Adoption Behavior of Seed Producers

S. No	Independent Variable	Beneficiaries	Non-Beneficiaries
		Correlation Coefficient(r)	Correlation Coefficient(r)
1	2	3	4
1	Age	0.076^{NS}	-0.028^{NS}
2	Education	0.347^{*}	0.271^{**}
3	Land holding	0.239^{**}	0.261^{**}
4	Social participation	0.254^{**}	-0.217^{NS}
5	Size of family	0.216^{**}	-0.241^{**}
6	Annual income	0.225^{**}	0.315^{**}
7	Marketing orientation	0.306^{**}	0.440^{*}
8	Attitude towards agriculture technology	0.274^{**}	0.315^{**}

Table 4: Contd.,			
9	Risk orientation	0.305**	0.322**
10	Innovativeness	0.430*	0.360*
11	Mass media exposure	0.235**	0.354*
12	Extension participation	0.253**	0.411*
13	Knowledge	0.389*	0.412*

NS= Non-significant

** = Significant at 1%

*= Significant at 5%

Correlation coefficient between independent variables and extent of adoption as dependent variable is presented in table 4 The table elucidated that knowledge, risk orientation, marketing orientation, attitude towards agriculture technology, extension participation, mass media exposure, innovativeness, education, land holding and annual income had positive and significant relationship with adoption behaviour of both the categories social participation and family type is negative and significant while age had negative and non-significant relationship. Contrary to this in the case of non-beneficiaries also showed positive and significant relationship with extent of adoption. These findings of the present investigation are in the conformity with the findings of **Shakya et al (2008) and Maraddi*et al*. (2008).**

CONCLUSIONS

Certain Broad Conclusions Emerging from the Analysis of Data Presented in the Preceding Chapters are as Follows

- Beneficiaries had greater level of socio-economic and psychological characteristics than non-beneficiaries except land size.
- Beneficiaries had more favorable attitudes whereas, non-beneficiaries had less responsive attitude towards agricultural technology.
- The level of knowledge of beneficiaries about seed production technology was greater while non-beneficiaries were found to be ignorant about some important aspects of technological practices.
- The adoption behavior of beneficiaries were found greater than that of non- beneficiaries.
- Combination with precision did not get adequate attention, with the results, timely application was not possible. By far, these are the two major factors affecting seed yield relatively at non-beneficiaries farms. These results show that the programme based on the seed production technology was adversely affected for want of anticipated returns on the one hand and for lack of adequate and timely supply of inputs and credit support on the other. Nevertheless, it is assumed that there will be better supplies of factors of production including credit, and weaknesses as pointed out above remedied. From the production perspective the constraints to quality seeds of HYVs take two forms: those influencing the yield potentialities of the crop under the farmers' environment and those influencing the disposition and aptitude of the farmer to attain the yield at farm level. Clearly in Kalahandi region both kinds of constraints affected the yield potential at the farm level. Therefore, more suitable varieties for different agro-climatic zones is a necessity on the one hand and access to resources including (a) credit and (b) diffusion of innovations among farmers and extension agencies on the other hands.
- The study has brought into focus some newer factors which influenced the performance of new-seed based technology stated differently. It has identified the constraints mentioned elsewhere. Thus, it provides a frame work

for better understanding of technical and allocative efficiencies of individual farmers producing quality seeds of paddy.

RECOMMENDATIONS

From the findings of the study and on the basis of our own observations, we offer a few recommendations which bear on the specific situation and will help the extension agencies to disseminate the improved practices at a greater pace.

Steps should be taken to see that more modal farms, demonstrations plots and seed farms are introduced in the community development blocks to serve the farmers as important centers of information and supply in the process of diffusion of innovations.

Efforts should be made to bring more educated people within the fold of agri-business. Graduates from rural areas, with specialized in agricultural sciences, should be induced to take the agro-based enterprises in large number.

Extension agencies should avoid factors that may adversely affect the adoption of improved practices by farmers, such as supply of low quality seeds, untimely supply of seeds, implements, insecticides and fungicides that are unsuitable to the local conditions

The agriculture credit policy of the government and the cooperatives should be recommended to enable, the farmers to receive credit adequately and promptly by assurance of fair prices of produce has important roles to play in the adoption process.

From the point of view of future research on the problem, socio-psychological factors showed be given more importance than economic factors as the farmers appear to be relatively more influential. In this regard, the attributes like political knowledge, interpersonal trust, leadership and deferred gratification etc. observed to be important factor.

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